

What is claimed is:

1 1: A method comprising:
2 evaluating the activity of one or more virtual machines; and
3 reallocating physical resources to the virtual machine(s) based, at least in part, on
4 the evaluated activity.

1 2: The method of claim 1, further including:
2 monitoring the activity of one or more virtual machines.

1 3: The method of claim 2, wherein monitoring the activity of one or more virtual
2 machines includes monitoring an activity selected from a group including:
3 interrupt usage,
4 processor usage,
5 network usage,
6 disk usage, and
7 whether the virtual machine is performing a time-critical task.

1 4: The method of claim 2, wherein monitoring the activity of one or more virtual
2 machines includes:
3 monitoring the activity of the virtual machine substantially in parallel with
4 executing the virtual machine.

1 5: The method of claim 1, wherein reallocating physical resources to the virtual
2 machine(s) based, at least in part, on the evaluated activity includes:
3 either increasing or decreasing the ability of the virtual machine(s) to access to a
4 physical resource.

1 6: The method of claim 5, wherein reallocating physical resources to the virtual
2 machine(s) includes:
3 increasing the ability of the virtual machine(s) to access to a first physical resource; and
4 decreasing the ability of the virtual machine(s) to access to a second physical resource.

1 7: The method of claim 5, wherein reallocating physical resources to the virtual
2 machine(s) includes a reallocation selected from a group including the following:
3 altering the order in which the virtual machine(s) are executed,
4 swapping between virtual machines,
5 assigning core affinity to a virtual machine,
6 assigning a processor affinity to a virtual machine, and
7 altering the time quanta assigned to the virtual machine(s).

1 8: The method of claim 1, wherein reallocating physical resources to the virtual
2 machine(s) is performed by a virtual machine monitor having a resource manager to
3 evaluate the virtual machine(s) activity.

1 9: The method of claim 8, wherein the resource manager is a part of an integrated circuit.

1 10: The method of claim 1, wherein evaluating the activity of one or more virtual
2 machines includes:
3 determining whether the activity of the virtual machine(s) is sufficient to trigger a
4 change in the resource allocation;
5 suggesting a resource allocation; and
6 determining whether the suggested resource allocation negatively impacts the
7 performance of another virtual machine.

1 11: An article comprising:
2 a storage medium having a plurality of machine accessible instructions, wherein when the
3 instructions are executed, the instructions provide for:
4 evaluating the activity of one or more virtual machines; and
5 reallocating physical resources to the virtual machine(s) based, at least in part, on
6 the evaluated activity.

1 12: The article of claim 11, further including instructions providing for:
2 monitoring the activity of one or more virtual machines.

1 13: The article of claim 12, wherein the instructions providing for monitoring the activity
2 of one or more virtual machines includes instructions providing for monitoring an activity
3 selecting from a group including:
4 interrupt usage,
5 processor usage,
6 network usage,
7 disk usage, and
8 whether the virtual machine is performing a time-critical task.

1 14: The article of claim 12, wherein the instructions providing for monitoring the activity
2 of one or more virtual machines includes instructions providing for:
3 monitoring the activity of the virtual machine substantially in parallel with
4 executing the virtual machine.

1 15: The article of claim 11, wherein the instructions providing for reallocating physical
2 resources to the virtual machine(s) based, at least in part, on the evaluated activity

3 includes instructions providing for:
4 either increasing or decreasing the ability of the virtual machine(s) to access to a
5 physical resource.

1 16: The article of claim 15, wherein the instructions providing for reallocating physical
2 resources to the virtual machine(s) includes instructions providing for:
3 increasing the ability of the virtual machine(s) to access to a first physical resource; and
4 decreasing the ability of the virtual machine(s) to access to a second physical resource.

1 17: The article of claim 15, wherein the instructions providing for reallocating physical
2 resources to the virtual machine(s) includes a reallocation selected from a group
3 including the following:
4 altering the order in which the virtual machine(s) are executed,
5 swapping between virtual machines,
6 assigning core affinity to a virtual machine,
7 assigning a processor affinity to a virtual machine, and
8 altering the time quanta assigned to the virtual machine(s).

1 18: The article of claim 11, wherein the instructions providing for reallocating physical
2 resources to the virtual machine(s) are performed by a virtual machine monitor having a
3 resource manager to evaluate the virtual machine(s) activity.

1 19: The article of claim 18, wherein the resource manager is a part of an integrated
2 circuit.

1 20: The article of claim 11, wherein the instructions providing for evaluating the activity
2 of one or more virtual machines includes instructions providing for:
3 determining whether the activity of the virtual machine(s) is sufficient to trigger a
4 change in the resource allocation;
5 suggesting a resource allocation; and
6 determining whether the suggested resource allocation negatively impacts the
7 performance of another virtual machine.

1 21. An apparatus comprising:
2 a plurality of virtual machines, capable of sharing a plurality of physical
3 resources;
4 an activity monitor, capable of monitoring the activity of the virtual machines;
5 a virtual machine manager, capable of managing the virtual machines and
6 reallocating access to the physical resources amongst the virtual machines, based at least
7 in part on the monitored activity.

1 22. The apparatus of claim 21, wherein the virtual machine monitor includes a resource
2 manager that is capable of reallocating access to the physical resources amongst the
3 virtual machines.

1 23. The apparatus of claim 21, wherein the activity monitor is capable of monitoring an
2 activity selected from a group including:
3 interrupt usage,
4 processor usage,
5 network usage,
6 disk usage, and
7 whether the virtual machine is performing a time-critical task.

1 24. The apparatus of claim 23, wherein the activity monitor is capable of monitoring the
2 activity of the virtual machines substantially in parallel with the execution the virtual
3 machines.

1 25. The apparatus of claim 21, wherein the virtual machine monitor is capable of either
2 increasing or decreasing the ability of the virtual machine(s) to access to a physical
3 resource.

1 26: The apparatus of claim 25, wherein the virtual machine monitor is capable of
2 reallocating physical resources to the virtual machine(s) via:
3 increasing the ability of the virtual machine(s) to access to a first physical resource; and
4 decreasing the ability of the virtual machine(s) to access to a second physical resource.

1 27: The apparatus of claim 25, wherein the virtual machine monitor is capable of
2 reallocating physical resources to the virtual machine(s) by selecting from a group
3 including the following:
4 altering the order in which the virtual machine(s) are executed,
5 swapping between virtual machines,
6 assigning core affinity to a virtual machine,
7 assigning a processor affinity to a virtual machine, and
8 altering the time quanta assigned to the virtual machine(s).

1 28: The apparatus of claim 22, wherein the resource manager is further capable of
2 evaluating the monitored activity of the virtual machine(s).

1 29: The apparatus of claim 28, wherein the resource manager is capable of evaluating the
2 monitored activity of the virtual machine by:
3 wherein evaluating the activity of one or more virtual machines includes:
4 determining whether the activity of the virtual machine(s) is sufficient to trigger a

5 change in the resource allocation;
6 suggesting a resource allocation; and
7 determining whether the suggested resource allocation negatively impacts the
8 performance of another virtual machine.

1 30: The apparatus of claim 29, wherein the activity monitor and virtual machine monitor
2 are integrated into the same circuit.

1 31. A system comprising:
2 a plurality of resources, having a processor and a network interface;
3 a plurality of virtual machines, capable of sharing access to the plurality of
4 physical resources;
5 an activity monitor, capable of monitoring the activity of the virtual machines;
6 a virtual machine manager, capable of managing the virtual machines and
7 reallocating access to the physical resources amongst the virtual machines, based at least
8 in part on the monitored activity.

1 32. The system of claim 31, wherein the virtual machine monitor includes a resource
2 manager that is capable of reallocating access to the physical resources amongst the
3 virtual machines.

1 33. The system of claim 31, wherein the activity monitor is capable of monitoring an
2 activity selected from a group including:
3 interrupt usage,
4 processor usage,
5 network usage,
6 disk usage, and
7 whether the virtual machine is performing a time-critical task.

1 34. The system of claim 33, wherein the activity monitor is capable of monitoring the
2 activity of the virtual machines substantially in parallel with the execution the virtual
3 machines.

1 35. The system of claim 31, wherein the virtual machine monitor is capable of either
2 increasing or decreasing the ability of the virtual machine(s) to access to a physical
3 resource.

1 36: The system of claim 35, wherein the virtual machine monitor is capable of
2 reallocating physical resources to the virtual machine(s) via:

- 3 increasing the ability of the virtual machine(s) to access to a first physical resource; and
- 4 decreasing the ability of the virtual machine(s) to access to a second physical resource.

1 37: The system of claim 35, wherein the virtual machine monitor is capable of
2 reallocating physical resources to the virtual machine(s) by selecting from a group
3 including the following:

- 4 altering the order in which the virtual machine(s) are executed,
- 5 swapping between virtual machines,
- 6 assigning core affinity to a virtual machine,
- 7 assigning a processor affinity to a virtual machine, and
- 8 altering the time quanta assigned to the virtual machine(s).

1 38: The system of claim 32, wherein the resource manager is further capable of
2 evaluating the monitored activity of the virtual machine(s).

1 39: The system of claim 38, wherein the resource manager is capable of evaluating the
2 monitored activity of the virtual machine by:
3 wherein evaluating the activity of one or more virtual machines includes:
4 determining whether the activity of the virtual machine(s) is sufficient to trigger a
5 change in the resource allocation;
6 suggesting a resource allocation; and

7 determining whether the suggested resource allocation negatively impacts the
8 performance of another virtual machine.

1 40: The system of claim 39, wherein the activity monitor and virtual machine monitor
2 are integrated into the same circuit.